

**Illinois Environmental Protection Agency  
Bureau of Water, Permit Section  
(IEPA)**

1021 North Grand Avenue East, Post Office Box 19276, Springfield, Illinois 62794-9276, 217/782-3362

The IEPA has issued a Public Notice of a request for a Clean Water Act Section 401 water quality certification that would allow the issuance of a federal permit for the discharge of pollutants to waters of the State.

**Public Notice Beginning Date:**

Thursday, May 6, 2021

**Public Notice Ending Date:**

Friday, May 21, 2021

**Agency Log No.:C-0005-21**

**Federal Permit Information:** Federal permit/license no. LRC-2019-597 is under the jurisdiction of Chicago District, Regulatory Branch U.S. Army Corps of Engineers

**Name and Address of Discharger:** :Paul Moyano, City of Evanston - 2100 Ridge Ave, Evanston, IL60201

**Discharge Location:** NE quarter of section 7 in township 41N range 14E in Cook county. Additional project location information includes the following: 555 Lincoln Street, Evanston, IL 60201

**Name of Receiving Water:** Lake Michigan

**Project Description:** Proposed replacement of an existing raw water intake with a 60 inch diameter concrete cylindrical pipe. The new pipe will extend 5,500 feet from the Evanston Water Treatment Plant shoreline and will be located near the alignment of the existing intake.

**Construction Schedule:** Beginning Apr 2022 and ending Oct 2023

The Public Notice period will begin and end on the dates indicated in the heading of this Public Notice. Interested persons are invited to submit written comments on the project to the IEPA at the above address. Commenters shall provide their name and address along with comments on the certification request. The IEPA Log number must appear on each comment page. Commenters may include a request for public hearing. Only comments that pertain to Clean Water Act Section 401 authority as defined under 40 CFR part 121.3 will be considered. Part 121.3 defines the "scope of a Clean Water Act section 401 certification is limited to assuring that a discharge from a Federally licensed or permitted activity will comply with water quality requirements". Requests for additional comment period must provide a demonstration of need. The last day that comments will be received will be on the Public Notice period ending date unless the IEPA grants an extended notice period.

The attached Fact Sheet provides a detailed description of the project and the findings of the IEPA's antidegradation assessment.

If written comments or requests indicate a significant degree of public interest in the certification application, the IEPA may, at its discretion, hold a public hearing. Public notice will be given 30 days before any public hearing. If a Section 401 water quality certification is issued, response to relevant comments will be provided at the time of the certification. For further information, please see the contact information below.

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Post Document. No. C-0005-21-05062021-PublicNoticeAndFactSheet.pdf

Antidegradation Assessment Review for a 401 Water Quality Certification for City of Evanston New Intake Pipe.

IEPA Log No. C-0005-21

Cook County

Contact: Angie Sutton 217-782-9864

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The City of Evanston (“Applicant”) has applied for a 401 Water Quality Certification for impacts associated with replacing a raw water intake at the Evanston WTP located at 555 Lincoln Street in Evanston, Cook County Illinois. The project site is located on Lake Michigan in the Northeast quadrant of Section 7, Range 14 East, Township 41 North. The City of Evanston intends to replace a raw water intake in Lake Michigan that was originally constructed in 1909. The intake to be replaced is currently cast iron pipes that are 36 and 42 inches in diameter on the lakebed, and an upturned cone intake structure. Regular, routine inspections and maintenance have been completed over the years, but recently it was observed that there has been a decrease in flow capacity. The intake has exceeded its expected useful life thus prompting a need for its replacement. Replacement will consist of constructing a new intake structure, new intake pipeline, and onshore modifications at the water treatment facility. The new intake will be 60 inch diameter concrete cylindrical pipe. The pipe will have an upturned cone inlet structure and be located approximately 5,500 feet from the WTP shoreline and will be located near the alignment of the 1909 intake. The old intake will be cut, plugged with 44 cubic yards (CY) of rounded cobble, and abandoned in place. Construction will be performed by a combination of barge-based marine open-trench and nearshore cofferdam construction. A staging area will be prepared on land which will require removal or trimming of four trees, and barges will be prepared for offshore work. The applicant proposes utilization of a temporary sheetpile cofferdam to install the first 30 feet of pipe. An open marine trench approximately 5,470 feet is proposed with temporary side casting of the material on the lake bottom. Approximately 5,500 linear feet of pipe, 15,421 CY of bedding and backfill stone, 6,959 CY of IDOT riprap, and 27,885 square yards of filter fabric will be installed. The pipe will be capped with the native side cast lakebed material. Expected permanent impacts will occur at the intake structure and total 0.094 acres (Ac.) with the rest of the project buried and capped with native lakebed material resulting in no permanent impacts to waters of the U.S. No compensatory mitigation is proposed or anticipated to be required for this project. The remaining impacts will be temporary and will be mitigated for by use of a temporary sheetpile cofferdam during shoreline penetration and installation of the first 30 feet of pipe, dewatering through filter bags, use of turbidity curtains, limits to disturbance of the lakebed, and water quality monitoring using applications of standard dredging practices.

Information used in this review was obtained from application documents dated, February 21, February 23, 2021, February 25, 2021, and April 15, 2021.

### **Identification and Characterization of the Affected Water Body.**

Lake Michigan has 0 cfs of flow during critical 7Q10 low-flow conditions. Lake Michigan is classified as a Lake Michigan Basin Use Water. Lake Michigan is not listed as a biologically significant stream in the 2008 Illinois Department of Natural Resources Publication *Integrating Multiple Taxa in a Biological Stream Rating System*, nor is it given an integrity rating in that document. Northwestern University Beach, Waterbody Segment IL\_QM-06, is listed on the 2018 Illinois Integrated Water Quality Report and Section 303(d) List as impaired for fish consumption use with potential causes given as mercury and polychlorinated biphenyls and for primary contact use with potential cause given as E-coli. A Total Maximum Daily Load (TMDL) Report has been prepared and approved by the USEPA for 51 beaches along Illinois’ Lake Michigan shoreline to address Primary Contact Use Recreation impairments due to excess bacteria. The proposed activity occurs within an area identified by the May 15, 2013 report,

approved July 31, 2013, “Shoreline Segments in Suburban Lake County, Illinois” as a Beach Protection Area and is therefore subject to this TMDL.

During site inspections in the fall of 2019 and summer 2020, there was no beach, vegetation or wetlands present lake side of the sheetpile wall. The water level reached the vertical face of the sheetpile at the project site and west of the wall, some trees and shrubs had grown through the rubblemound shoreline protection slope. This was followed by a landscaped turfgrass upland. A wetland delineation was not applicable for this project site and therefore, was not performed.

### **Identification of Proposed Pollutant Load Increases or Potential Impacts on Uses.**

The pollutant load increases that would occur from this project include some possible increases in total suspended solids. These increases are a normal and unavoidable result of the proposed pipeline alignment during construction. The existing benthic habitat along the proposed construction corridor would be permanently removed. Fish eggs and larvae may be smothered by the proposed activity. Lab testing from various points of the proposed construction suggest a potential increase in short-term loading of ammonia, metals, oil and grease, phosphorus, sulfate, total dissolved solids and total suspended solids, during trenching and pipe installation. Geotechnical investigations revealed that the trench will be primarily within soft silty clay with trace to little sand, and trace gravel.

### **Fate and Effect of Parameters Proposed for Increased Loading.**

The increase in total suspended solids would be local and temporary. The existing aquatic life use in the construction area will be temporarily disturbed but will recover over time. Testing of the construction zone for contamination used *Great Lakes Dredge Material Testing and Evaluation of Dredged Material Proposed for Discharge in Water of the U.S.* (Inland Testing Manual 1998) as suggested by the USACE Chicago District during a pre-application meeting. Performance of a water quality monitoring program during construction will also be beneficial. Temporary impacts on water quality will be minimized by implementation of an erosion and sediment control plan with best management practices. Short-term impacts of locally increased suspended solids will be minimized by use of a cofferdam for pipe installation. Dewatering of the temporary cofferdam will be performed using sump pit, water filtration bags and anionic flocculant. The contractor will also use a turbidity curtain while performing nearshore and offshore barge-based trench construction techniques and make all reasonable efforts to limit lakebed disturbance. Additionally, handling of lakebed excavation will be minimized by temporarily and gently sidecasting excavated material adjacent to the trench. This material will then be used to cap the newly constructed pipe. There are no long-term impacts expected due to settling of sediment into the lakebed.

### **Purpose and Social & Economic Benefits of the Proposed Activity.**

The purpose of this project is to allow the Evanston Water Treatment Plant to continue to treat and supply up to its capacity of 108 million gallons per day (MGD) of potable water to its consumers.

### **Assessments of Alternatives for Less Increase in Loading or Minimal Environmental Degradation.**

The Applicant has analyzed alternatives taking into consideration pipe size, pipe material, intake location, intake design, shore connections, mussel management and ice management.

### **Replace 1909 Raw Water Intake with a 60” Buried Pipe with Uprturned Cone Intake- Proposed Action:**

This option was based on analysis of the following:

- Pipe Size – The size of the new intake pipe is dependent on existing facility characteristics, water supply requirements, lake level, pipe roughness and redundancy requirements. Analysis determined that at low lake level, with the largest (54”) existing intake out of service, the new intake would be required to be 60” in order to provide enough water to meet facility capacity.
- Pipe Material – Criteria evaluated to determine pipe material included product history, cost, expected design life, constructability and local availability. Based on these criteria, it was determined that concrete pressure pipe was the best option.
- Intake Location – Location options were taken into consideration for impacts on navigation, vulnerability to icing, visibility to the public and water quality. Intakes are ideally located when submerged at least 30 feet into Lake Michigan but reaching these depths would require an intake nearly double the length of existing intakes. This analysis concluded that a new intake adjacent to the 1909 pipe that is being replaced, would be the best option when considering intake location.
- Intake Design – The facility looked at upturned cone and timber crib intake options. It was determined that the upturned cone option is the best intake design option.
- Shore Connections – There were four options assessed for connecting the new intake to existing facilities on shore. All options would breach the shore in a similar location and have equal impacts to waters of the U.S.
- Mussel Management – The existing intakes use chlorine application to manage mussels. After consideration of several mussel management technologies, the preferred option for the new intake was determined to be to use a similar chlorine application system management.
- Ice Management – Because the current heating system used at existing intakes has proven to be a successful ice management system, a similar system is proposed for the new intake.

The Proposed Action would allow the facility to meet inflow capacity and provide a stable source of raw water for many years to come. This option would include installation of 5,500 LF of 60” concrete pipe placed in a marine trench, an upturned cone intake, and a connection to existing WTP facilities. Final placement will be buried beneath the Lake Michigan lakebed. Additionally, construction will result in temporary impacts on waters of the U.S., with no wetland or fill, and no impacts to special aquatic sites.

The following alternatives to the preferred project would have reduced temporary pollutant load increases compared to the proposed action and were considered during the design phase:

Shore Intake Option: An intake at the existing shoreline adjacent to the facility was considered. This option would not require 5,500 LF of buried concrete pipe or an upturned cone intake structure. This option would disturb less lakebed than the proposed project during construction and result in reduced temporary impacts, as well as be less expensive to construct than an offshore intake. However, this option was not chosen as the nearshore zone has lower and less consistent water quality compared to the proposed location. Water temperature, turbidity and pollutant loads fluctuate more in the nearshore zone. Littoral drift of sand and sediment can clog intake structures which would require routine maintenance to keep the intake clear, and wave action stirs the lakebed thereby increasing suspended solids and pollutants. An intake at this location would also be impacted by lake level variability. Additionally, algae is more prominent in nearshore zones, and the area often freezes in the winter. For these reasons, this option was not chosen.

Shorter Intake Option: An intake pipe shorter than 5,500 LF was considered. This option would disturb less lakebed than the proposed project during construction and reduce temporary impacts, as well as be less expensive to construct than an offshore intake. However, this option was not chosen, as raw water intakes should be submerged at least 30 feet over the intake inlet. This depth will result in a reduction of occurrence of frazil ice blockages at the intake. In this part of the lake an intake would be required to be

between 8,000 and 10,000 feet offshore to meet the 30-foot submergence requirement. Construction of an intake that length would be cost prohibitive. The proposed project intake is within the vicinity of existing City intakes. These intakes have 21-24 feet of submergence over the intake inlet which has proven to be a manageable depth for controlling frazil ice formation. Shallower placement was believed to be too risky for potential frazil ice development. For these reasons, this option was not chosen.

Trenchless Construction Option: Trenchless pipe construction methods were considered, including rock tunneling and soft ground tunneling. Both methods would cause less lakebed disturbance than the proposed project and reduce temporary impacts. An offshore geotechnical investigation was performed to provide information regarding trenchless construction options, but these methods were not chosen. Top of bedrock location would require a much deeper rock tunnel than the proposed project pipe. Connections and construction would be much more complicated and costly than the proposed project. Rock tunnels are generally not cost effective for the 60” pipe required. Increased cost effectiveness is seen with the use of much larger pipes. The geotechnical investigations also found very soft to soft silty clay in the area where soft ground tunneling would take place. Tunneling operations through this type of substrate presents a significant construction challenge. Based on the geotechnical data collected, rock tunneling was deemed too costly and soft ground tunneling was determined to be too risky. For these reasons, this option was not chosen.

No Action Alternative – The existing 1909 cast iron intake pipe is currently experiencing decreased capacity. The Evanston WTP facility is rated at 108 MGD and has 3 separate intakes in Lake Michigan. These intakes are all between 5,000 and 6,000 feet offshore. The two newer intakes were constructed in the 1970s and are in good condition, well within the expected lifespan, and buried beneath the lakebed. However, the two 1970s intakes are not capable of providing sufficient raw water to the facility on their own. Additionally, the 1909 intake will continue to experience decreased capacity and is vulnerable to structural failure, as well as anchor strikes due to its location on the lakebed surface. This option is not viable as it will not allow the facility to operate at full capacity in future years and prohibit the City from providing finished water to all of its approximately 490,000 customers.

### **Summary Comments of the Illinois Department of Natural Resources, Regional Planning Commissions, Zoning Boards or Other Entities.**

On February 7, 2020, the IDNR EcoCAT review was initiated for the project area. On February 21, 2020 the review identified the following state-listed plants in the vicinity of the project: ground juniper (*Juniperus communis*), marram grass (*Ammophila breviligulata*), sea rocket (*Cakile edentula*), and seaside spurge (*Chamaesyce polygonifolia*). IDNR recommended a botanical survey be conducted and if any above-listed plants are located, flag their location and avoid them. If avoidance is not possible, IDNR suggests conservation measures to help promote continued existence of these plants in the area. Given the recommendation is adopted, IDNR has determined that impacts are unlikely. The applicant responded to IDNR on December 29, 2020, agreeing to these conditions.

### **Agency Conclusion.**

This preliminary assessment was conducted pursuant to the Illinois Pollution Control Board regulation for Antidegradation found at 35 Ill. Adm. Code 302.105 (antidegradation standard) and was based on the information available to the Agency at the time this assessment was written. We tentatively find that the proposed activity would result in the attainment of water quality standards; that all technically and economically reasonable measures to avoid or minimize the extent of the proposed increase in pollutant loading have been incorporated into the proposed activity, and that this activity would benefit the City of Evanston by providing the facility the ability to continue to treat and supply up to its capacity of 108

MGD of potable water to its consumers. Comments received during the 401 Water Quality Certification public notice period will be evaluated before a final decision is made by the Agency.